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**G4A AUXF**

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**INT CL<sup>7</sup> G06F**

(54) Abstract Title

**Analyzing transaction information**

(57) Affiliation information is acquired that identifies parties affiliated with an organization in a manner that enables the parties to be associated with commercial transactions occurring outside the organization. In connection with a commitment by a customer to a commercial transaction that produces transaction information for effecting payment electronically from a source other than the organization, it is determined whether the commercial transaction is on behalf of a party affiliated with the organization based on the affiliation information and the transaction information. Referral information is acquired that indicates a referral event and a destination associated with the referral event. In connection with a commitment by a customer to a commercial transaction that produces transaction information for effecting payment electronically, an extent is determined to which the commercial transaction is a result of the referral event based on the referral information and the transaction information.

FIGURE 2

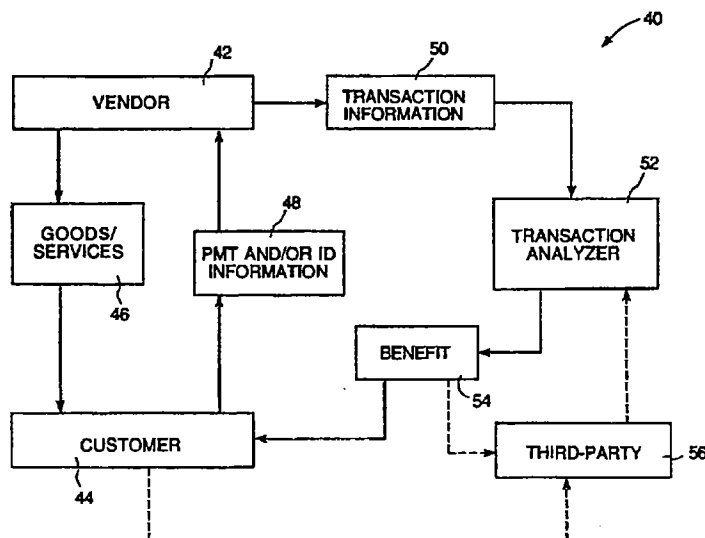
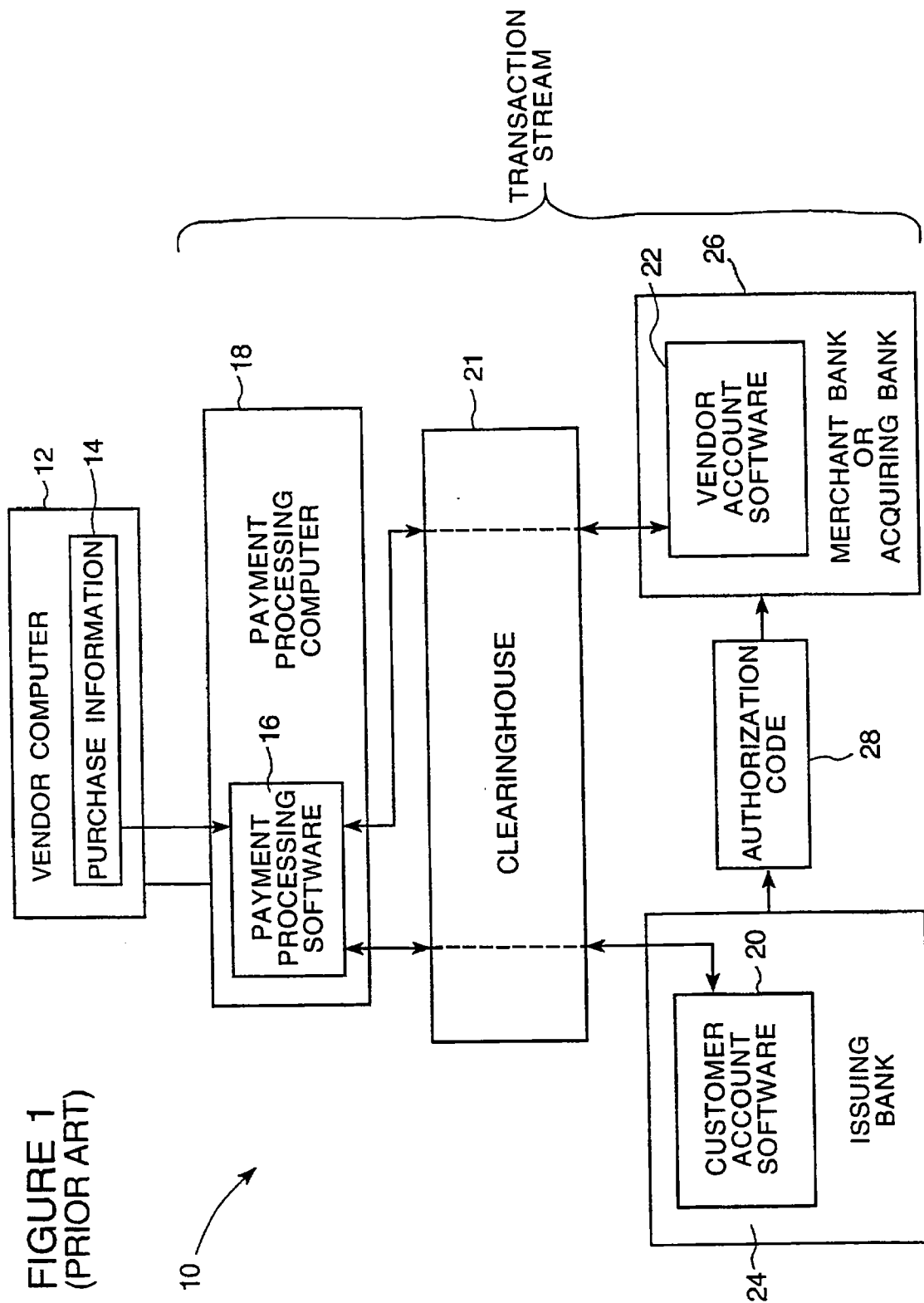
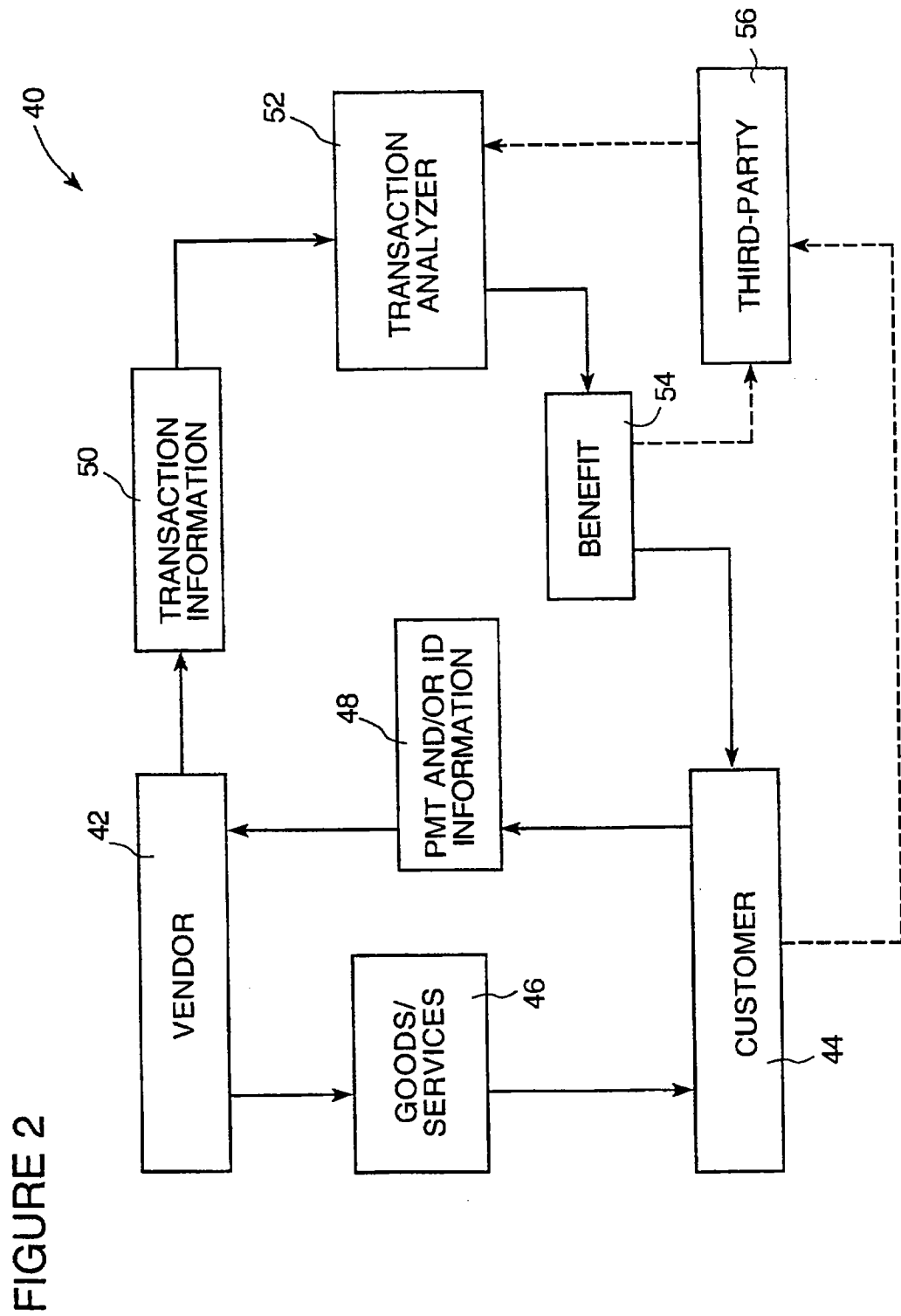


FIGURE 1  
(PRIOR ART)





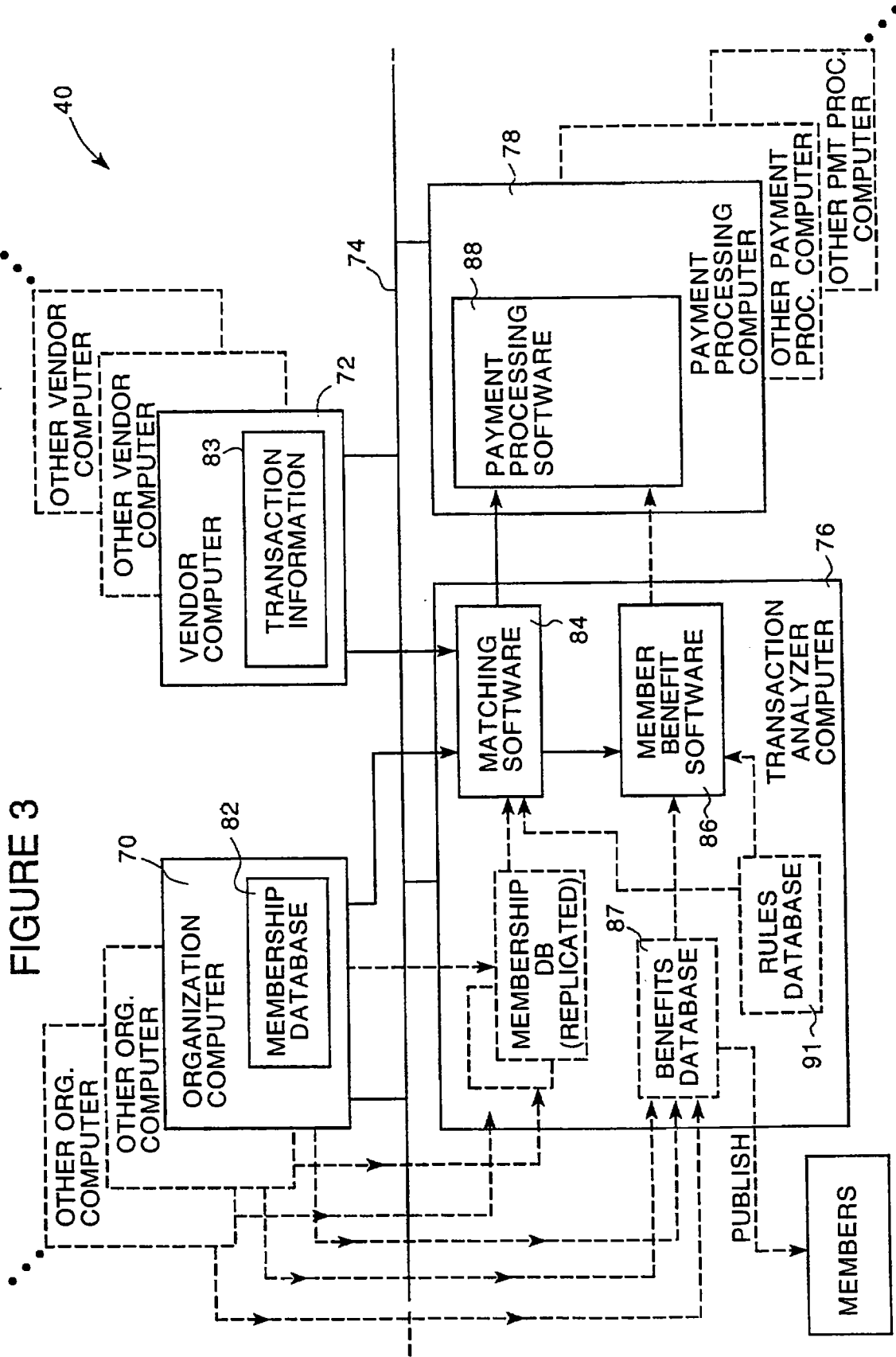


FIGURE 4

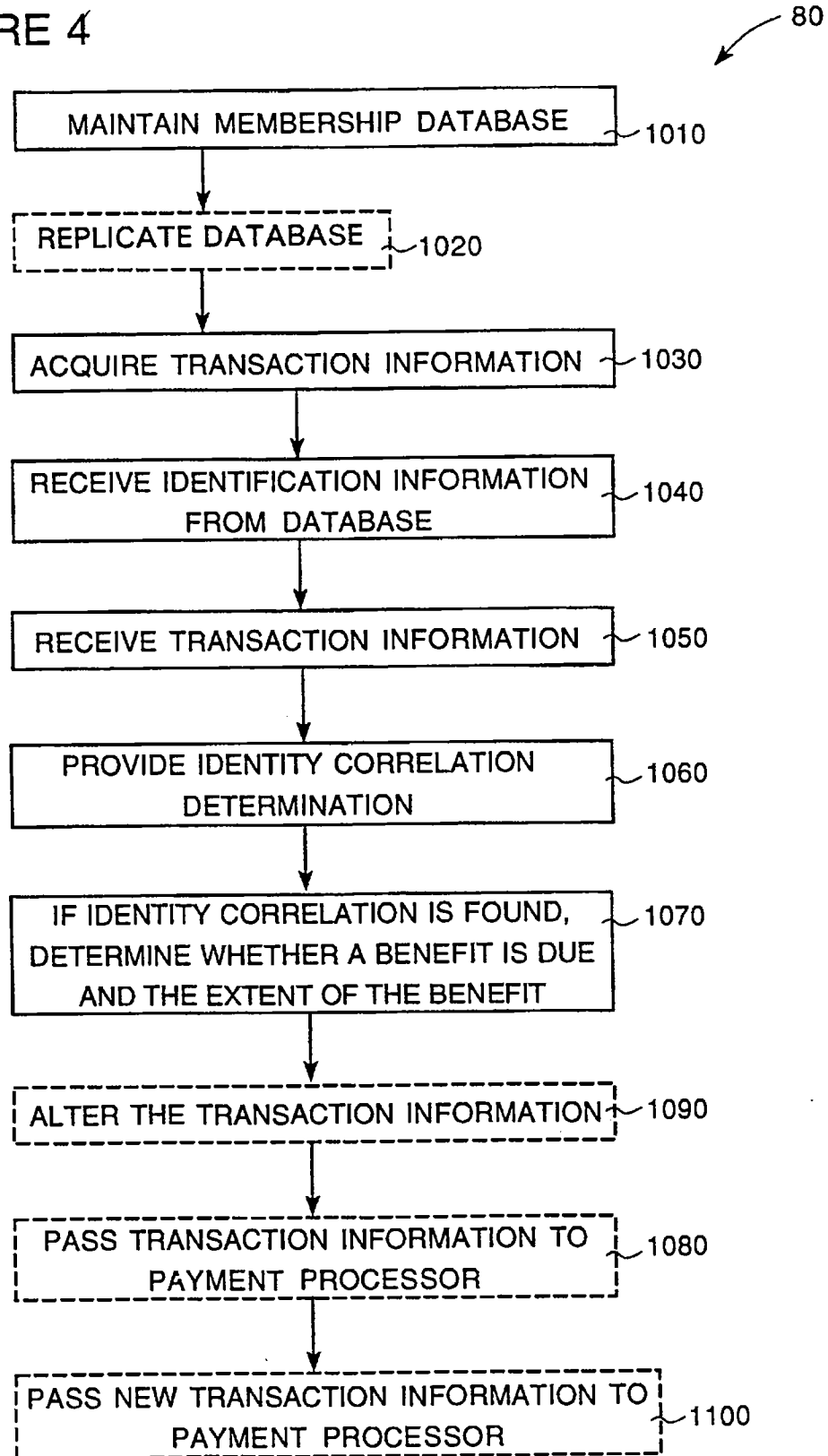


FIGURE 5

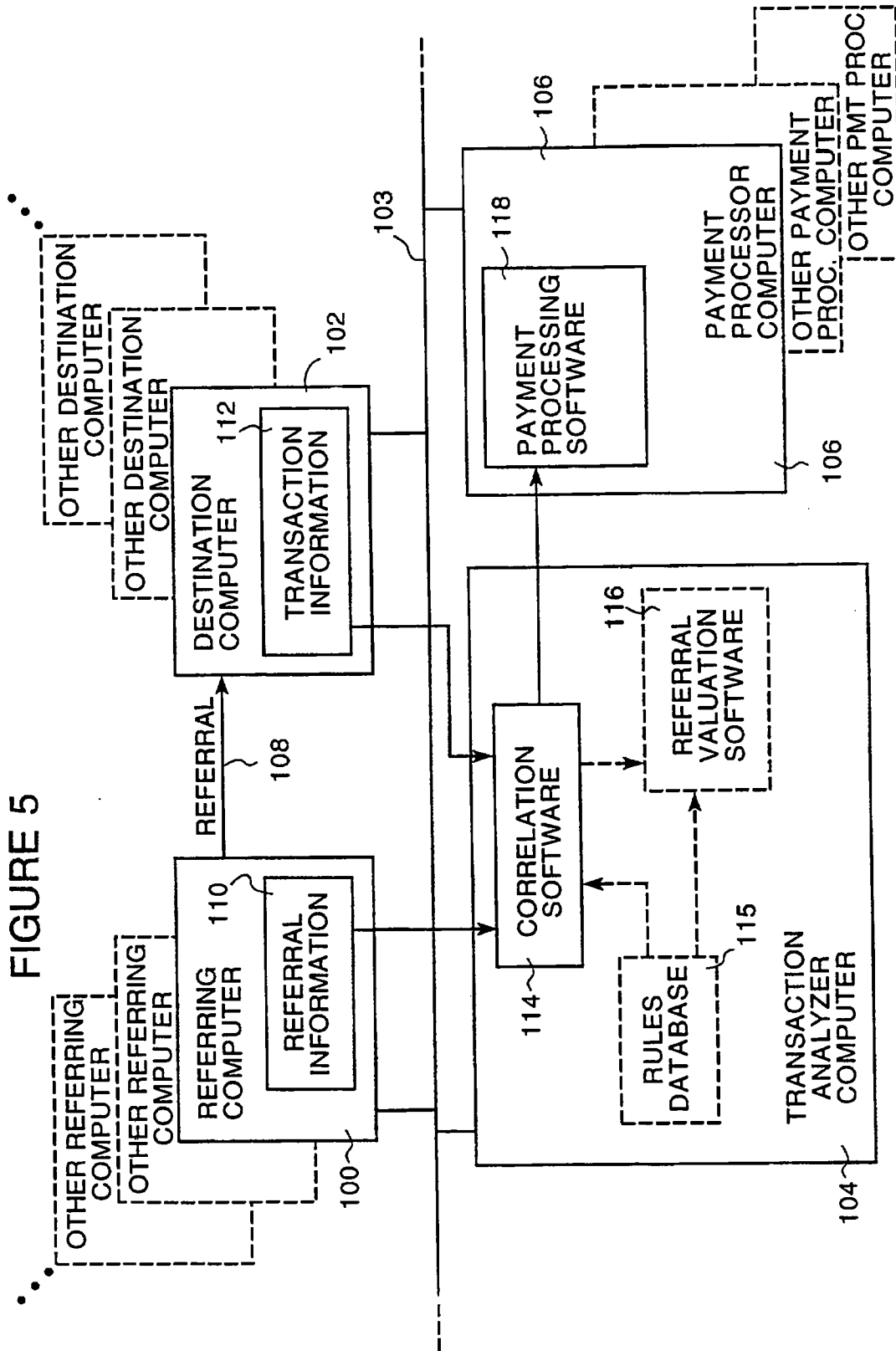


FIGURE 6

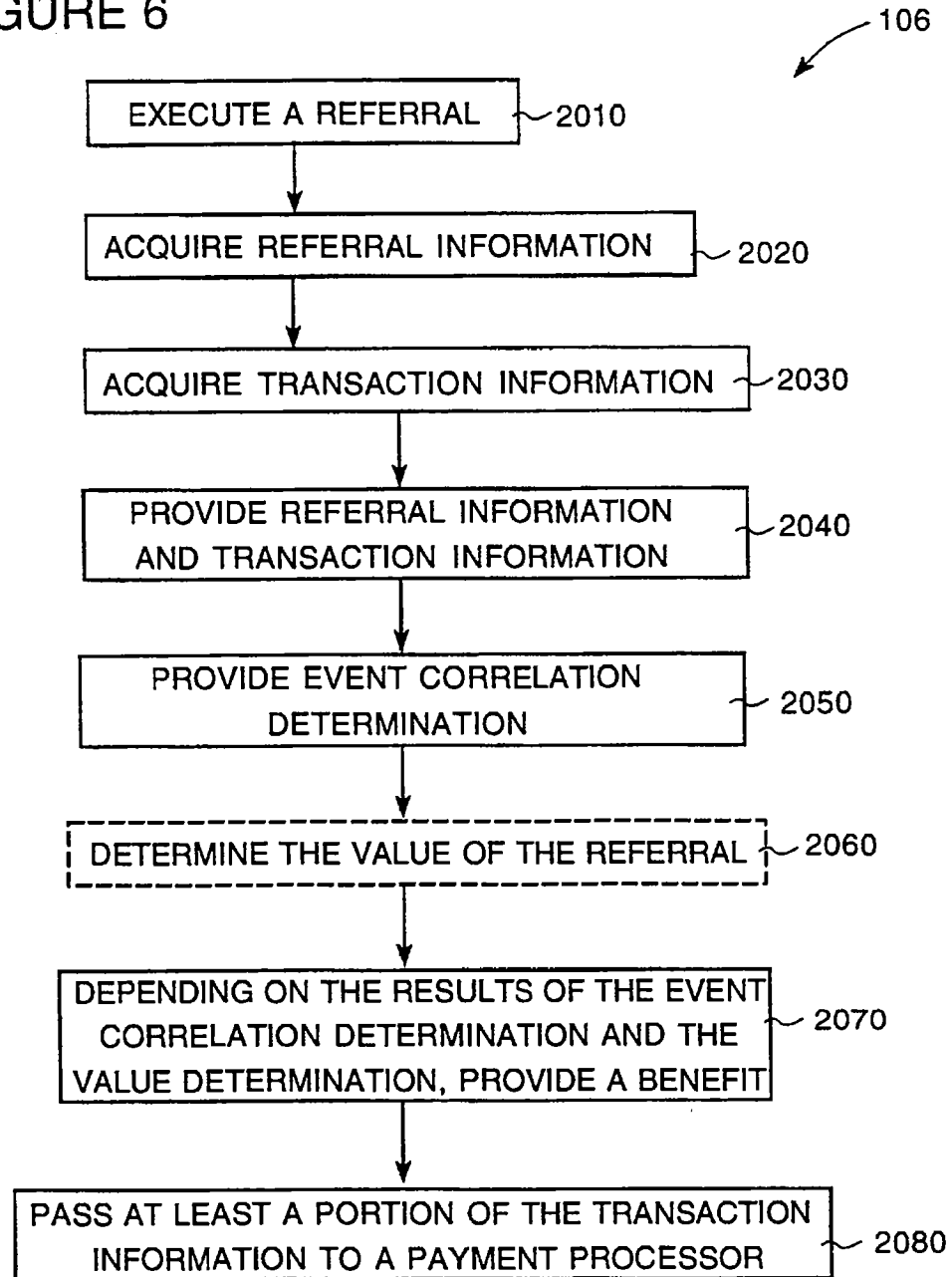


FIGURE 7

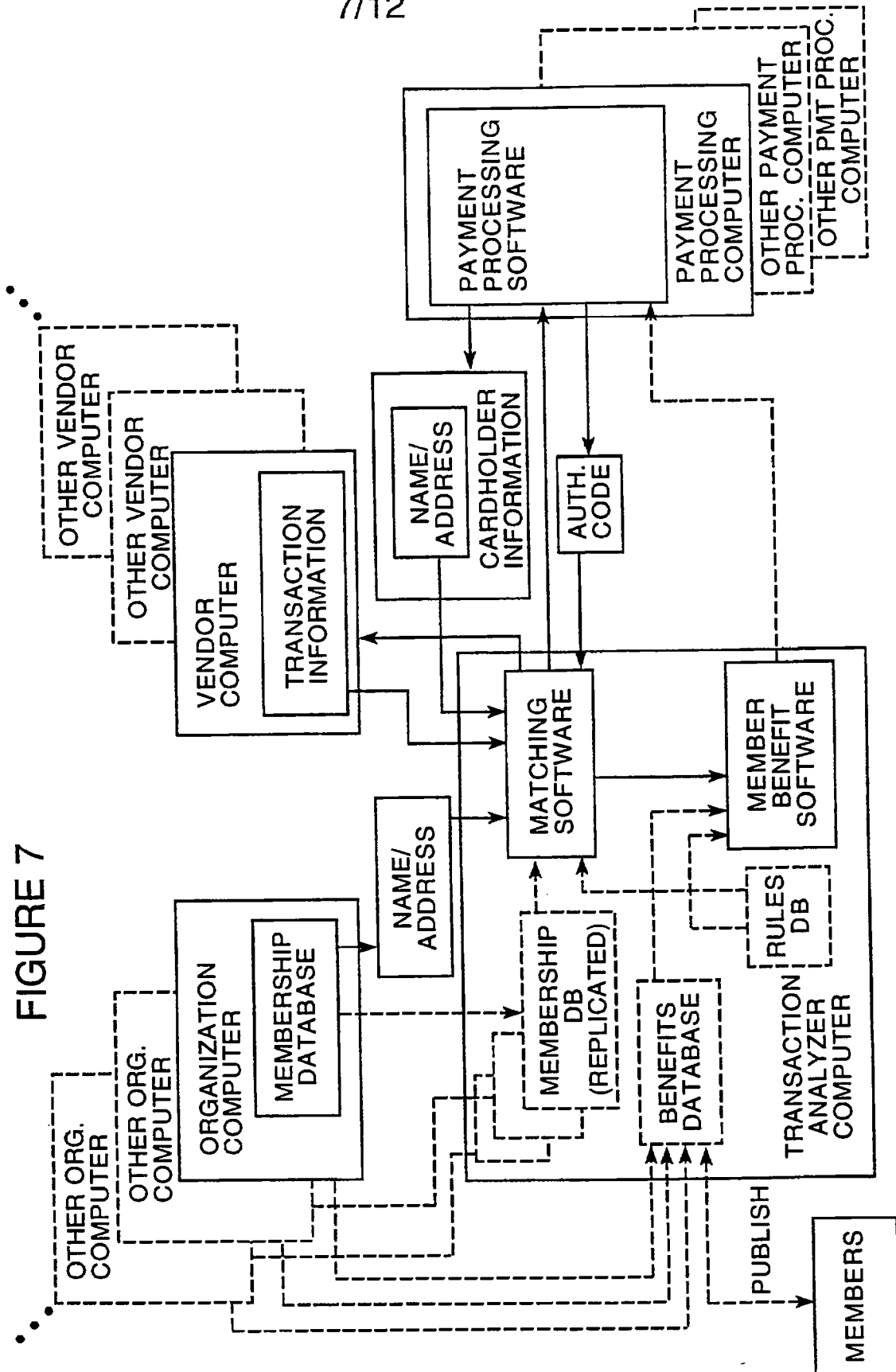




FIGURE 8

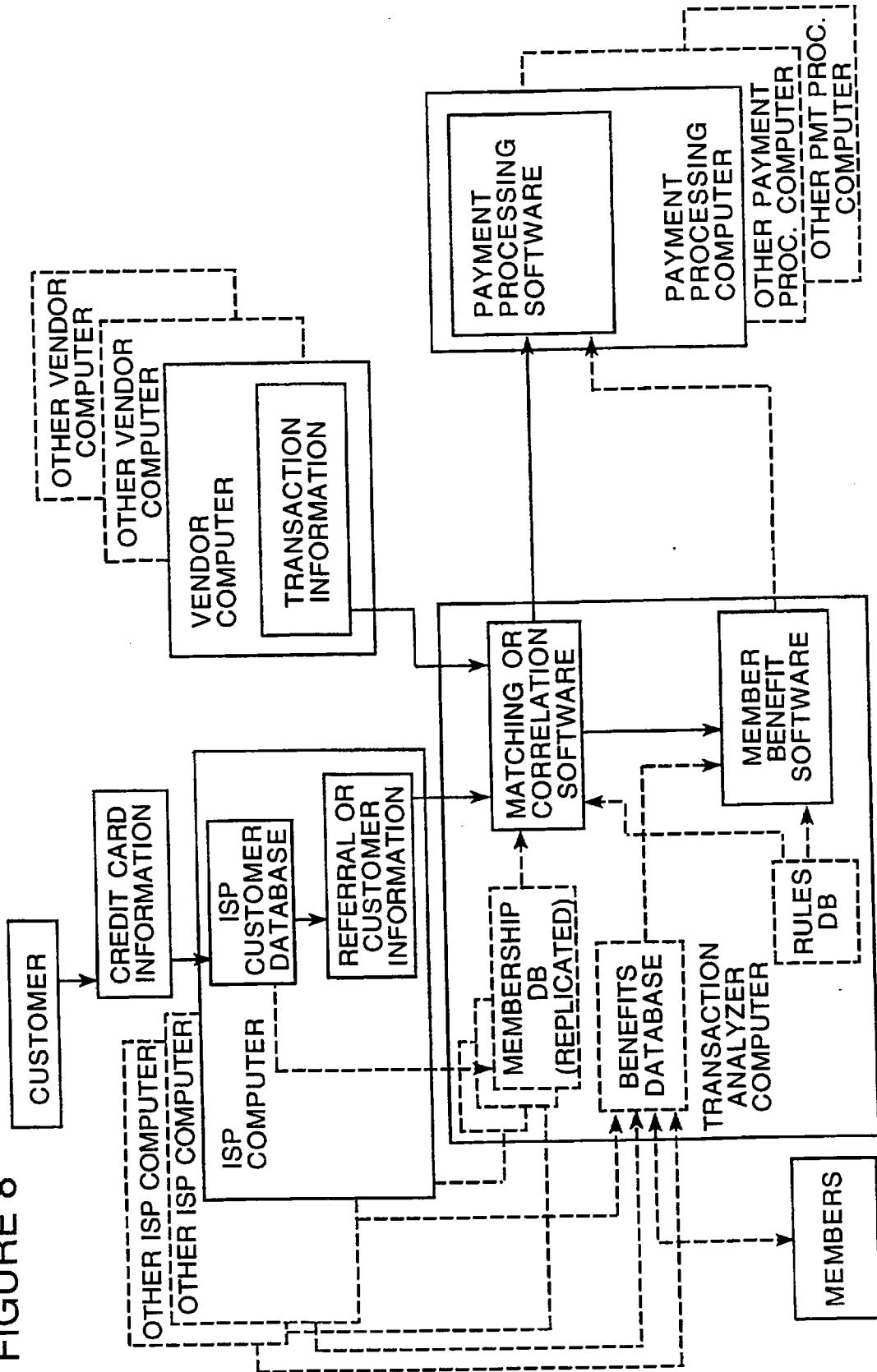


FIGURE 9

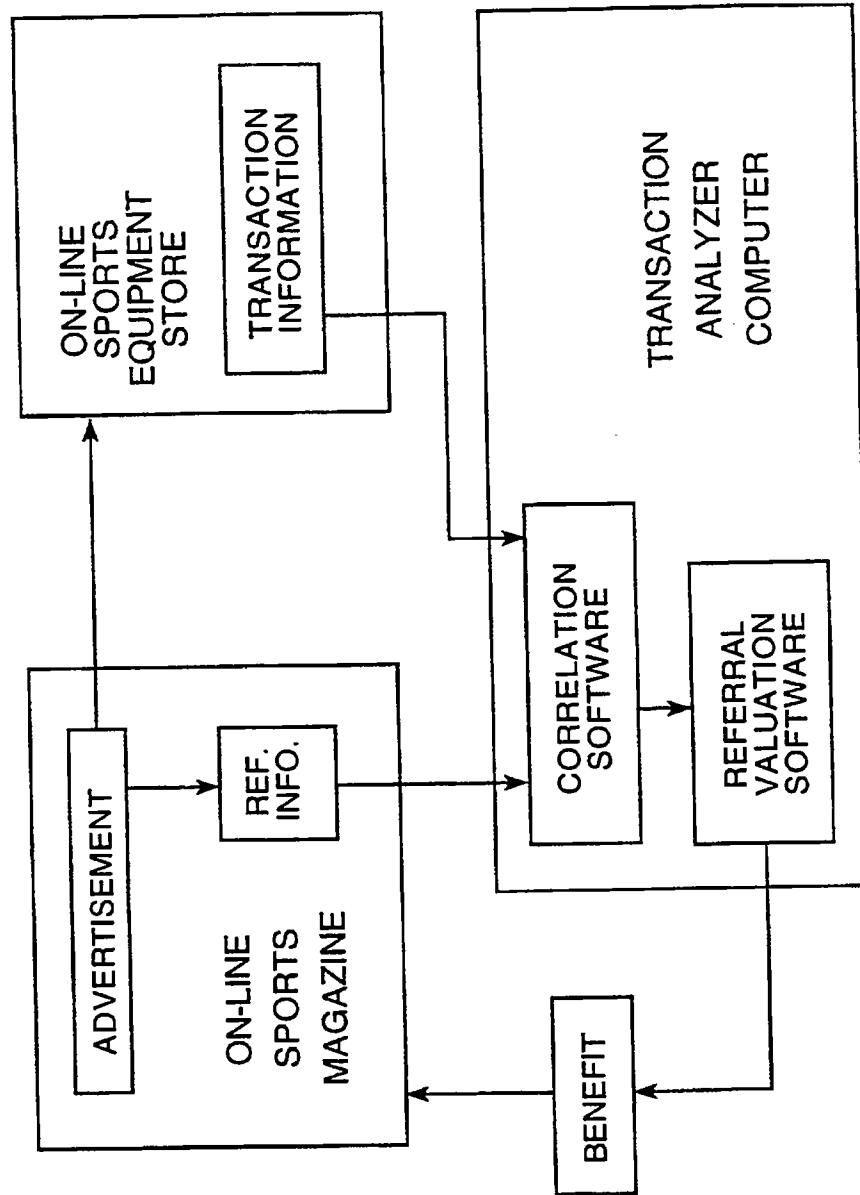


FIGURE 10

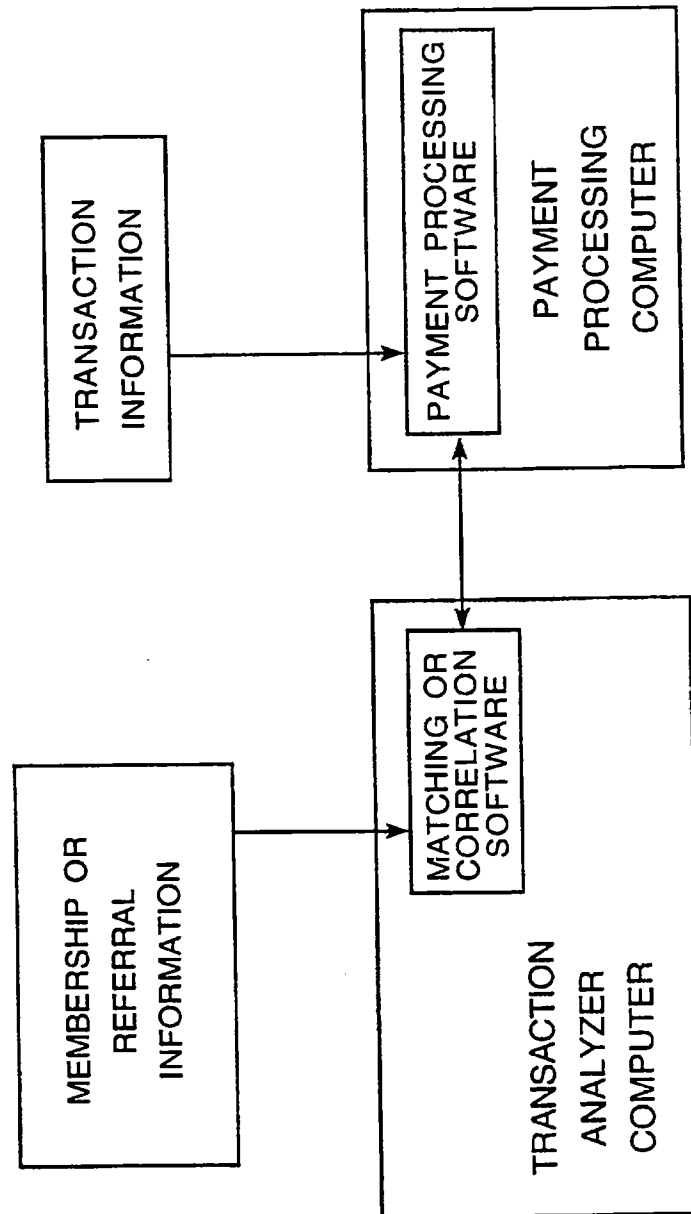
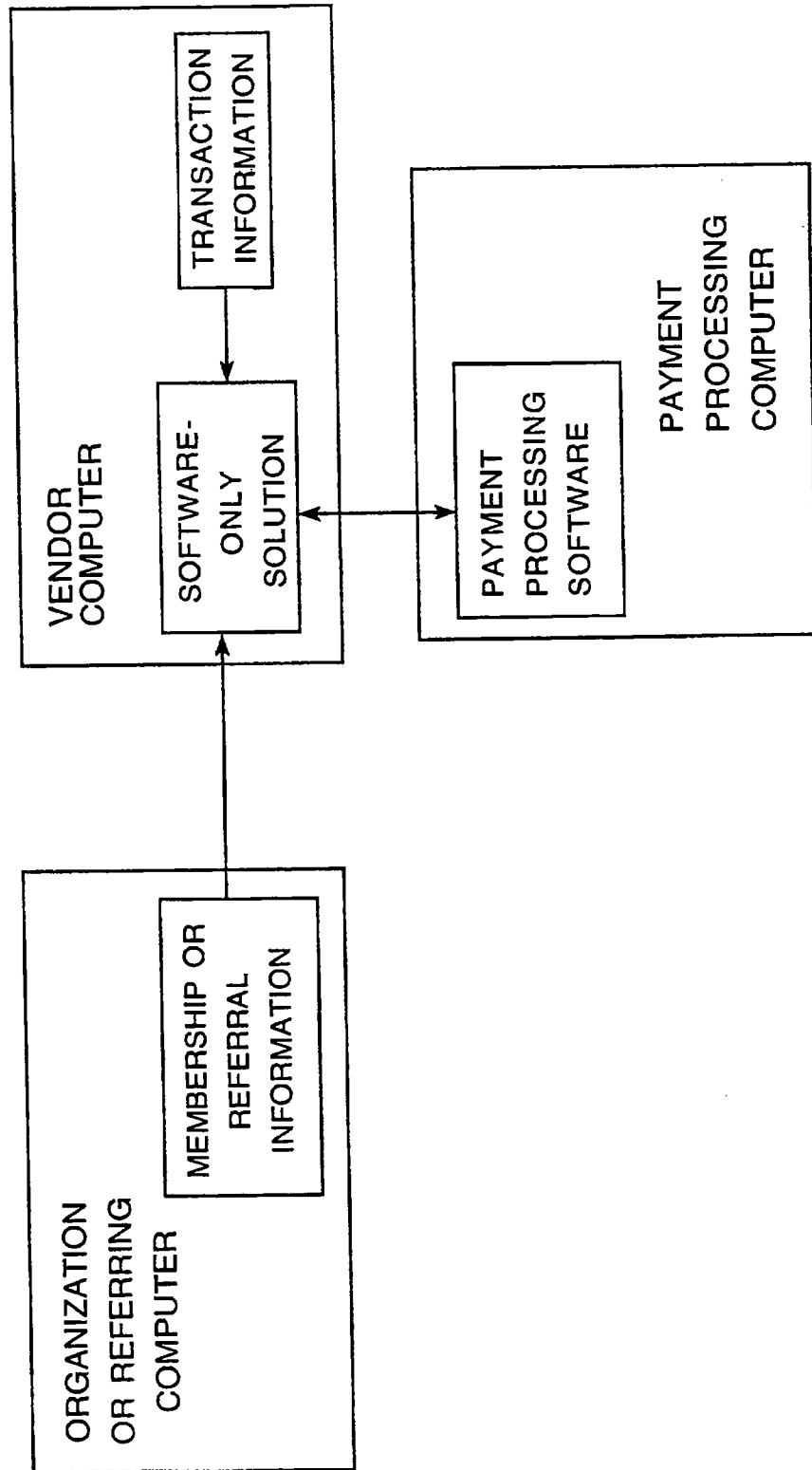
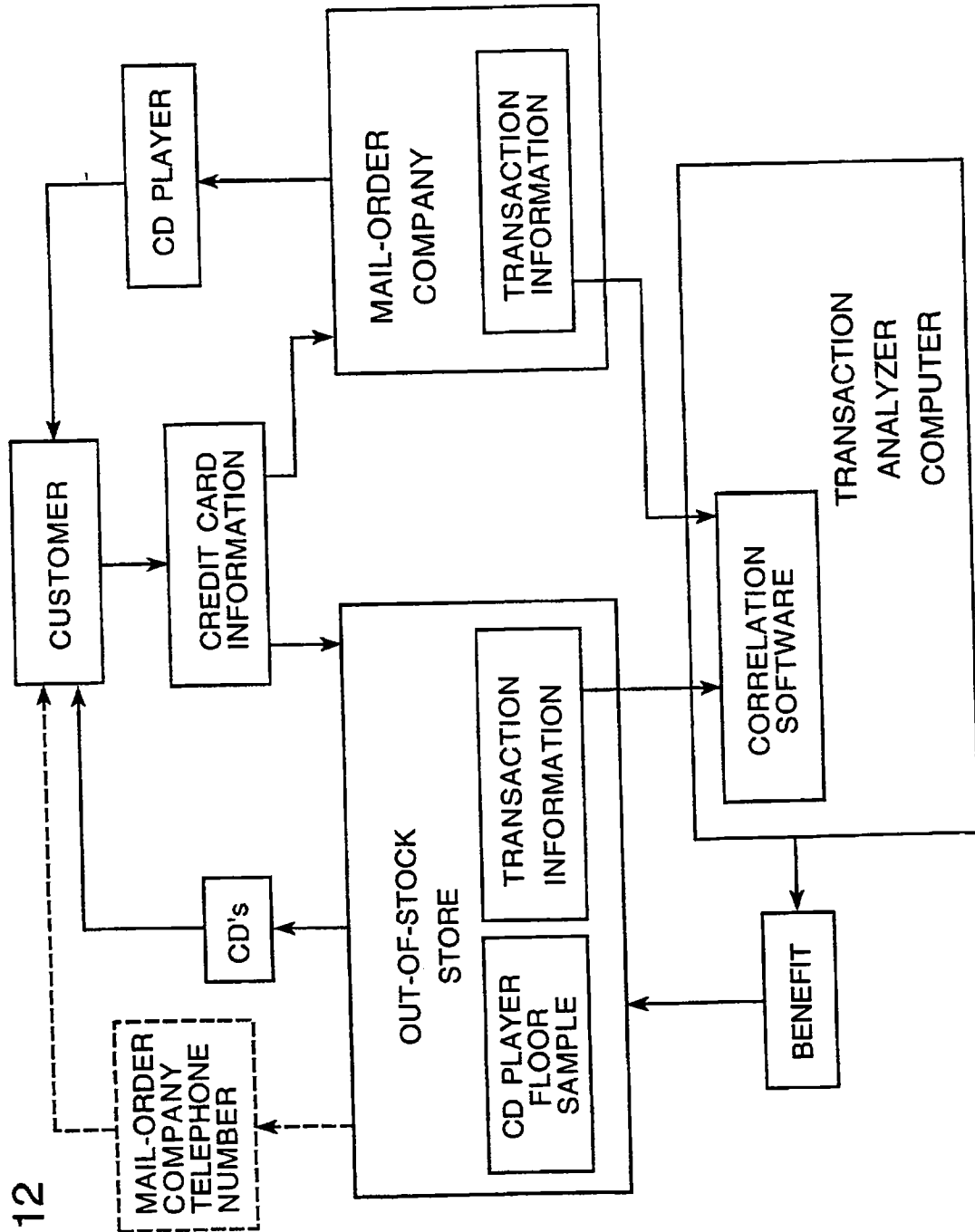


FIGURE 11





ANALYZING TRANSACTION INFORMATIONBackground of the Invention ..

5           This invention relates to analyzing transaction information.

          A commercial transaction may involve not only a customer, a merchant, and a party who handles transferring funds from the customer to the merchant, but  
10 also a party who brought the customer and the merchant together. Effectively tracking and compensating for the contribution of the party who brought the customer and merchant together is important.

          For example, a member of an automobile club may  
15 receive a discounted price on a hotel stay by presenting a club membership card, because the hotel pays the club for a listing in the club's hotel guide and may not have otherwise attracted the member as a customer. In another example, in a traditional real estate transaction, a  
20 party who refers a buyer to a seller is paid a finder's fee. On-line commercial transactions may also involve customer organizations (e.g., subscribers to an on-line magazine) and referring parties (e.g., Web indices and Internet service providers).

25           In commercial transactions, payment is often made using a credit card mechanism. Funds are transferred from the buyer's account in the credit card's issuing bank to the merchant's account in the merchant's bank. Often, the merchant presents a charge slip or other  
30 indicator that the buyer has committed to the transaction. Typically, a party known as a payment processor insulates the merchant from at least some of the complexities of the transfer. For example, Fig. 1 shows a credit card processing system 10 in which a  
35 merchant computer 12 (e.g., a credit card machine) enters purchase information 14 (e.g., credit card number,

purchase amount, and merchant identification number) into a transaction stream to consummate a purchase from a merchant. In the transaction stream, payment processing software 16 running on a payment processor computer 18  
5 accepts the purchase information and interacts via a clearing house 21 with customer account software 20 and merchant account software 22 running on an issuing customer bank or issuing institution (e.g., AMEX, Discover) computer 24 and a merchant bank or acquiring  
10 computer 26, respectively. The clearing however, could be, for example cc Association, Visa, or MC Network. In the interaction, the payment processing software provides the merchant or acquiring bank computer with an authorization code 28 indicating that the card has not  
15 been cancelled stolen, expired, lost, or over extended on credit and the customer has sufficient credit for the purchase, and arranges for the electronic transfer of funds.

#### Summary of the Invention

20 Among the advantages of the invention are one or more of the following. A benefit can be earned in a commercial transaction (e.g., a purchase from an on-line store) by a member of an organization or by a referring party (e.g., a directory Web site having a hyperlink to  
25 the on-line store) without a single entity having control over all aspects of the transaction. A system can be provided in which a referral benefit is earned only if the party that is referred actually engages in a commercial transaction based on the referral. The extent  
30 of the benefit (e.g., the size of the finder's fee) can be tied directly to the value of the commercial transaction (e.g., the price of the item purchased on-line). A Web site having hyperlinks to merchant Web sites can earn finder's fees simply by gathering  
35 information about the hyperlinks selected by visitors to

the Web site and providing the information to a transaction analyzer. An on-line commercial transaction can be linked to an organization or to a referring party in a way that is independent of a particular software  
5 program (e.g., a Web browser) used by a customer, who may use different programs at different locations (e.g., at home and at work). A merchant having an on-line store can offer a benefit to referring parties without adopting referral-tracking software and requiring each referring  
10 party to run software that is compatible with the referral-tracking software, and without having to support the referral-tracking software.

Other advantages and features will become apparent from the following description and from the claims.

15           Brief Description of the Drawings

Fig. 1 is a block diagram showing a credit card processing system.

Fig. 2 is a block diagram showing a transaction processing system.

20           Figs. 3, 5, and 7-12 are block diagrams of implementations of the transaction processing system.

Figs. 4 and 6 are block diagrams of implementations of procedures in the transaction processing system.

25           Description of the Preferred Embodiments

Fig. 2 illustrates a transaction processing system  
40 in which a merchant 42 and a customer 44 engage in a commercial transaction in which goods or services or both 46 (e.g., a restaurant meal or a lease) are provided by  
30 the merchant to the customer and payment or identification information or both 48 (e.g., a credit card number) is provided by the customer to the merchant. The merchant provides transaction information 50 (e.g., the credit card number) regarding the commercial  
35 transaction to a transaction analyzer 52 that determines



a benefit 54 (e.g., a discount) to be provided to the customer. In addition or instead, a third party 56 (e.g., a diners' organization or a referral source) may provide information (e.g., information identifying the customer as a member of the organization or describing a referral event) to the transaction analyzer which may determine that at least a portion of the benefit (e.g., a percentage of the value of the commercial transaction) is to be provided to the third party.

10        Fig. 3 shows a first specific example 40 of the transaction processing system, in which the customer is a member of an organization (e.g., a diners' organization) and receives the benefit (e.g., a discount in price) for engaging in the commercial transaction with the merchant  
15 (e.g., for buying a meal from a restaurant associated with the organization). In the example, the organization and merchant have an organization computer 70 and a merchant computer 72 (e.g., a credit card machine), respectively, that are linked by a computer network 74  
20 (e.g., a network that uses dial-up data links or Internet protocols) to a transaction analyzer computer 76 and a payment processing computer 78.

      Fig. 4 depicts a procedure 80 for processing the commercial transaction in connection with the system  
25 shown in Fig. 3. The organization computer has a membership database 82 of identification information for potential customers who belong to the organization (e.g., credit card numbers of diners who are members of the diners' organization) (step 1010). The database may be  
30 continuously or periodically replicated at the transaction analyzer computer (step 1020).

      When the customer engages in the commercial transaction with the merchant (e.g., submits a credit card to pay for a meal), the merchant computer acquires  
35 transaction information 83 (e.g., the cost of the meal

from a waiter or meal tab computer, a merchant number from a memory in the computer, and a name and a credit card number from a magnetic strip on the credit card or manually entered into the computer) (step 1030).

- 5 Matching software 84 running on the transaction analyzer computer receives the identification information from the membership database (step 1040) and the transaction information from the merchant computer (step 1050). The matching software provides identity correlation, i.e.,
- 10 determines whether the transaction is on behalf of a member of the organization (e.g., by comparing the name and/or address or the credit card number or a representation of the credit card number in the transaction information to the names or credit card
- 15 numbers in the identification information) (step 1060).

- If the transaction is on behalf of a member, the matching software directs member benefit software 86 running on the transaction analyzer computer to determine whether the member is qualified to receive a benefit
- 20 (e.g., a discount) based on the transaction, and the extent of such a benefit if one is due (step 1070).

- The transaction analyzer computer may rely on many different databases. For example, the determination about whether the member is to receive a benefit may be
- 25 made by reference to a member benefits database 87, the contents of which may be made available (e.g., by publication) to members. One or more other databases may be relied upon by the transaction analyzer computer to keep track of relationships among multiple merchants,
- 30 multiple operators of payment processing computers, and multiple referring parties, to determine one or more benefits due as a result of the commercial transaction.

- The matching software also passes at least some of the transaction information on to payment processing
- 35 software 88 running on the payment processing computer

(e.g., to allow an authorization code to be produced and returned to the credit card machine essentially immediately, and to effect payment) (step 1080).

If the member is due a benefit, the member benefit software may alter at least a portion of the transaction information (e.g., by reducing the amount to be charged to the credit card) before the transaction information is passed along to the payment processing software (step 1090), or may generate and pass to the payment processing software new transaction information (e.g., for a credit for the amount of the discount) derived from the original transaction information (step 1100).

The matching software's determination about whether the transaction is on behalf of a member of the organization may occur substantially contemporaneously with confirming authorization for the commercial transaction, i.e., in real time, in near real time, during or immediately before or after such authorization, or during or immediately before or after when information about the execution becomes available. For example, in the case of a credit card charge, the determination may occur after the transaction information is acquired by the merchant computer and either before the payment processing software provides an authorization code for the charge or thereafter within a period of time (e.g., hours or days) that is short relative to the credit card's billing cycle. The phrase "substantially contemporaneously" refers to at least the following points in time: in the case of payment for goods or services (e.g., a restaurant meal), the points in time from the time that the customer provides payment information (e.g., a credit card) through the time that the transaction is settled by the merchant being provided with funds for the goods or services (e.g., from an account at the credit card's issuing bank); and from the

time that the customer submits an order including payment information (e.g., a completed on-line order form) through the time that the order is acknowledged by the merchant (e.g., in a message sent by electronic mail, 5 also known as e-mail).

Thus, at least the following features may be provided. The customer may receive or be made aware of the benefit before the customer's credit card bill arrives. For example, a real-time discount may be 10 arranged, so that when a credit card slip (e.g., for a meal at a restaurant) is presented to the customer for the customer's signature, the slip bears a lower price, i.e., a price that reflects the discount. If the benefit is in the form of goods or services or credit towards 15 goods or services (e.g., frequent flier miles), the customer may gain access to the benefit immediately or nearly immediately after completing the credit card charge.

The determination whether the transaction is on 20 behalf of a member may be performed in a batch mode, wherein the determination does not necessarily occur substantially contemporaneously with authorization or settlement of the commercial transaction. For example, multiple sets of transaction information corresponding to 25 multiple transactions (e.g., involving the same customer) may be provided together to the matching software, and the matching software may compare the multiple sets all at once to information in the membership database (e.g., for the purpose of economizing access to the membership 30 database). The multiple sets may be included in transaction history reports known as "shadow files" which are copies of an authorization or settlement file that may be made available by the payment processing software. Each shadow file may correspond to a different merchant 35 and may include a transaction record for each commercial

transaction (e.g., credit card transaction) in which the merchant sent transaction information to the payment processing software during a time period (e.g., a month).

The nature and extent of the benefit provided to the customer may be determined by the member benefit software in accordance with formulas and rules (e.g., maintained in a rules database 91). For example, loyalty or affinity programs may be provided. In another example, thresholds may govern the extent of the benefit or whether the benefit is provided at all. A spending or activity goal may play a role so that the extent of the benefit depends on the amount spent by the customer or the number of commercial transactions entered into by the customer within a particular period of time. In the case of a diners' organization, a rule limiting the customer to one discount per month per restaurant may cause the customer to receive no benefit at all for a repeat visit to a restaurant in the same month.

Multiple organizations and multiple merchants may be involved. For example, the transaction analyzer may allow an automobile club and a diners' organization to team up with a pastry shop and a car rental agency, so that if an automobile club member who is also a diners' organization member buys a pastry from the pastry shop before picking up a rental car at the rental agency, the member receives a discount on the rental fee.

Fig. 5 shows a second specific example of the transaction processing system, in which the third party receives a benefit for referring the customer to the merchant. The third party and the merchant have a referring computer 100 (e.g., a World-Wide Web server running software providing a Web index or search engine that supplies hyperlinks to merchant Web sites) and a destination computer 102 (e.g., a Web server that holds a merchant Web site), respectively, linked by a computer

network 103 (e.g., a network using Internet protocols) to a transaction analyzer computer 104 and a payment processor computer 106.

Fig. 6 illustrates a procedure 106 for processing  
5 the commercial transaction in connection with the system shown in Fig. 5. In a referral event, the referring computer executes a referral 108 in which the customer's attention is directed to the destination computer (e.g., by causing the customer's Web browser to retrieve Web  
10 page information from the merchant Web site) (step 2010). In the case of a referring computer that supplies hyperlinks in Web pages, the referral event may be initiated when the user selects a hyperlink (e.g., by mouse-clicking), and the hyperlink may be arranged so  
15 that selecting the link not only causes the Web browser to retrieve information (e.g., a Web page) from the destination computer but also notifies the referring computer of the selection. Software such as Net.genesis software which may be used to record and tally such  
20 notifications.

The referring computer acquires referral information 110 including information identifying one or more of the following in connection with the referral event: the referral source (e.g., the Web index or search  
25 engine), the referral destination (e.g., the merchant Web site), the customer referred (e.g., by the customer's credit card number), and when the referral event occurred (step 2020).

When the customer undertakes a commercial  
30 transaction at the destination computer (e.g., by using a credit card number to pay a fee for access to an exclusive Web site, or to order merchandise from an on-line store), the destination computer acquires transaction information 112 similar to the transaction  
35 information described above in connection with the

example of Fig. 3 (step 2030). The referral information and the transaction information are provided to correlation software 114 running on the transaction analyzer computer (step 2040). Based on the referral and transaction information, the correlation software provides event correlation, i.e., determines the extent to which the commercial transaction is a result of the referral (step 2050). The correlation software may also direct referral valuation software 116 running on the transaction analyzer computer to determine the value of the referral in accordance with formulas and rules (e.g., maintained in a database 115) (step 2060).

In general, the formulas and rules operate to determine the value of the experience provided by the referring computer. The formulas and rules may have any of a number of characteristics. For example, the formulas and rules may reflect a judgment that the longer the time interval between the referral event and the execution of the commercial transaction, the less likely the commercial transaction was a direct result of the referral event. If so, the formulas and rules may specify that the value of the referral is zero or nearly zero if the time interval is longer than a particular period (e.g., 30 days). In another example, the formulas and rules may specify how the benefit is to be divided up among multiple third parties if it is determined that the commercial transaction is a result of more than one referral.

Depending on the results of the determinations by the correlation software and the referral valuation software, the benefit may be provided to the third party having the referring computer (step 2070).

At least a portion of the transaction information is passed along to payment processing software 118 in

much the same way such information is passed along in the example of Fig. 3 (step 2080).

Either or both of the determinations by the correlation software and the referral valuation software  
5 may occur substantially contemporaneously with execution of the commercial transaction. Either or both of the determinations may be performed in a batch mode, in much the same way as described above in connection with the first specific example. The referral information may be  
10 provided to the correlation software in multiple sets corresponding to multiple referral events (e.g., all originating from the same referring computer).

With respect to the subject matter described above, many variations and applications are possible.  
15 Multiple referring parties may be involved, possibly in a chain of referrals. For example, where an Internet service provider ("ISP") provides a home page that presents a hyperlink to a Web index of on-line sporting goods stores, a customer of the ISP may follow the  
20 hyperlink to the index which may refer the customer to a particular on-line store where the customer makes a purchase. In such a case, the transaction analyzer may be used to provide a benefit not only to the operator of the Web index but also to the ISP.

25 In some situations, the transaction analyzer may be used to provide a benefit not only to a customer as a result of the customer's affiliation with one or more customer organizations but also to one or more referring parties in the same commercial transaction. The  
30 transaction analyzer may rely on one or more databases that describe relationships among the customer organizations, the referring parties, merchants, and others. For example, an automobile club member viewing Web pages may select a hyperlink that refers the member  
35 to the Web site of a automobile magazine, where the



member fills out an on-line form to subscribe to the magazine. In the example, the transaction analyzer may determine not only that the operator who provided the hyperlink is due a percentage of the subscription price,  
5 but also that the member is due a discount on the subscription price as a result of the member's affiliation with the automobile club, which discount would be determined to be superseded by a different discount were the member also affiliated with the  
10 publisher of the magazine.

Expiration dates may be involved that affect at least some aspects of one or more of the benefits that may determined to be due. For example, the magnitude of a discount on a hotel stay may be reduced from 25% to 20%  
15 if the hotel stay does not commence with 30 days after execution of the commercial transaction, a \$10 discount on a rental car may be valid for only 60 days after such execution, or a benefit of two free gallons of gasoline may be valid for only six months or a year after such  
20 execution.

In another example, the membership database may be built in any of a number of ways. The members may submit to a formal registration process in which an information form is filled out. At least some of the information in  
25 the membership database (e.g., credit card information) may be derived indirectly, such as by reference to information (e.g., name or credit card number) recorded during a previous commercial transaction ("accumulation").

30 The matching software, the member benefit software, the correlation software, or the referral valuation software may make use of cardholder identification information that is provided for authentication purposes by the payment processing  
35 software under certain circumstances when a credit card

number is submitted and an authorization code is requested. This cardholder identification information may include the cardholder's name as it appears on the credit card, and the cardholder's billing address. In a  
5 variation (Fig. 7) of the first specific example described above, if the membership database includes members' names, the matching software may compare the cardholder's name as provided by the payment processing software to the names in the membership database. To  
10 reduce the chance that minor differences between the cardholder information and the membership database information (e.g., due to misspellings or differences in address formats) will prevent the finding of a match, the matching software may make use of special-purpose  
15 software that helps to reconcile such differences.

Many different kinds of information may be included in the membership database, the transaction information, and the referral information. For example, the transaction information may include an identification  
20 of the merchant, an order number, a credit card number, an expiration date for the credit card, a date, and the amount of the credit card charge. In some cases, the transaction information may include information about the goods or services involved in the commercial transaction  
25 (e.g., a product code or SKU).

For security or other reasons, the transaction information may include a number other than a true credit card number (e.g., an encrypted or surrogate credit card number), so that the matching software, member benefit  
30 software, correlation software, or referral valuation software must use the number to refer to a translation or de-encryption database to retrieve the corresponding true credit card number. The surrogate credit card number would be substituted for the actual credit card number  
35 before the transaction information is submitted to the

payment processor. In the case of a surrogate credit card number, it may be necessary for the number to include an actual bank identification number so that intermediary systems and equipment (e.g., a credit card machine) do not detect the surrogate nature of the number. The transaction information may include other information, such as smart card information, a personal identification number ("PIN"), a social security number, or a driver's license number.

10 In another example (Fig. 8), the membership database or the referral information may be provided by the customer's ISP to which the customer has submitted the customer's credit card information and from which the customer has been issued an e-mail address. The matching  
15 software and member benefit software may make use of the ISP's membership database in connection with a business promotion in which users of the ISP are provided with benefits for engaging in commercial transactions with the merchant. For instance, the ISP's users may be provided  
20 with discounts for buying books from an on-line bookseller who uses the same ISP. Since each user may have more than one credit card and may not always buy books with the same credit card used to pay the ISP for Internet access, the matching software and member benefit  
25 software may rely on the cardholder identification information described above to link book purchases to the ISP's users (e.g., by comparing names, addresses or e-mail addresses).

In the case of a referral wherein the referring  
30 computer belongs to the customer's ISP (e.g., wherein the referring computer serves as a gateway to the Internet for the customer), the referral information may include the customer's e-mail address and the transaction information may take the form of an e-mail message to the  
35 customer. For example, each time a user of the ISP

directs the user's Web browser to retrieve Web pages from the destination computer which belongs to a particular on-line store, the ISP may record referral information including the time and the user's e-mail address. The  
5 on-line store may require each purchaser to submit an e-mail address. When the customer completes an order to make a purchase from the on-line store, the on-line store may issue a confirming e-mail message to the customer and may provide a copy of the e-mail message to the  
10 correlation software, which copy serves as the transaction information. Since the copy of the e-mail message includes the customer's e-mail address, the correlation software can link the purchase to a referral from the ISP by matching the customer's e-mail address to  
15 the user's e-mail address. An e-mail message may be sent at a different time, such as when an order has been accepted, when the customer is notified of a problem with the order (e.g., a delay due to a back-ordered condition), when an order has been cancelled, when  
20 merchandise has been shipped, or when a full or partial refund has been issued.

The customer identification portion of the referral information may be acquired in other ways, such as by requiring users to register details such as their  
25 names, addresses, or credit card numbers to apply for access to the referring computer, or by retrieving such details from the users' computers (e.g., in cookies supplied by the users' Web browsers). Where a user of the referring computer is associated with a user name  
30 (e.g., a "handle" or "screen name"), the referral information may include the user name.

The handling of the referral as described above may provide significant advantages with respect to the practice of advertising on Web pages, because the  
35 handling allows detailed information to be determined

about the relationship between specific instances of Web page advertising and specific commercial transactions. For example (Fig. 9), a customer who retrieves Web pages from an on-line sports magazine to view an article about  
5 basketball may cause a referral event by selecting (e.g., by mouse-clicking) a hyperlinked advertisement that directs the customer to an on-line sports equipment store. In such a case, if the customer subsequently engages in a commercial transaction with the on-line  
10 sports equipment store, the actions of the correlation software and the referral valuation software may allow the on-line sports magazine to derive a benefit from the commercial transaction (e.g., in the form of a percentage of the value of the transaction), on the basis of the  
15 referral event involving the advertisement.

In cases in which the merchant pays Web site operators usage fees to display Web page advertisements, the determinations by the correlation software and the referral valuation software provide the merchant with  
20 insight into which of the advertisements are most effective in generating referral events that lead to commercial transactions, i.e., which of the advertisements are the most productive. Where merchants opt not to pay such usage fees, but allow Web page  
25 advertisements to be displayed and agree to pay finders' fees to operators of Web sites for referral events that lead to commercial transactions (i.e., for "successful referral events"), the determinations allow the operators of the Web sites to calculate which advertisements for  
30 which merchants generate the most finders' fee revenue. Thus, the determinations may be used to allow both the merchants and the Web site operators to make efficient use of their advertising resources. Generating information about referrals may require use of software.

The membership database, the transaction information, and the referral information may originate and be transferred in many different ways. For example, as mentioned above, the membership database may be  
5 replicated at the transaction analyzer computer. Such replication may be important in at least the real-time discount case, because latency delays between the organization computer and the transaction analyzer computer may hinder access to the membership database by  
10 the matching software, especially where such access is necessary each time a set of transaction information is received by the matching software.

In another example (Fig. 10), an arrangement may be selected in which the transaction information is  
15 provided by the merchant or destination computer directly to the payment processing software which passes the transaction information to the matching or correlation software. Such an arrangement may be particularly suitable for a case in which a credit card machine serves  
20 as the merchant computer and is already configured to use a dialup data connection to provide credit card information directly to payment processing software and to receive an authorization code. In such a case, the payment processing software may communicate the credit  
25 card information to the matching software before, substantially contemporaneously with, or after sending the authorization code to the credit card machine.

Many different configurations of software, computers, and connections between computers are  
30 possible. For example, the software described above may be used in conjunction with on-line shopping software to create an on-line store that provides the benefit as described above. With respect to the first specific example, the merchant may use a single computer that  
35 serves as both the merchant computer and the transaction

analyzer computer so that the merchant has an advanced level of control over the benefit. In another example (Fig. 11), a software package or a software toolkit such as an application program interface ("API") may include  
5 one or more of the matching software, the member benefit software, the correlation software, and the referral valuation software so that a software-only solution may be provided. Such software may significantly reduce configuration difficulties involved in allowing a  
10 merchant computer running commercial transaction software (e.g., for an on-line store) to provide member benefits and third party benefits as described above. In some cases, such software may be selected as the commercial transaction software's link to the payment processing  
15 software, so that the benefits feature is completely or nearly completely transparent to the commercial transaction software.

The matching software and the correlation software may use any of a number of techniques for comparing the  
20 transaction information to the membership database information and the referral information, respectively. For example, where an exact match is sought (e.g., between credit card numbers), a hashing method (e.g., a "Bloom-filter" matching method) may be used to reduce the  
25 amount of time required for the comparison.

The benefit provided to the customer or the third party may take any of a number of forms, including a direct financial benefit such as a portion of the value of the commercial transaction (e.g., a percentage of a  
30 sales price) and a non-financial benefit such as valuable information (e.g., a preferred customer list).

The commercial transaction may include a purchase, a lease, an installment contract, a barter, or any other transaction in which value is being exchanged. For  
35 example, the commercial transaction may include a

merchandise return in which the customer's credit card account is credited for all or a portion of the purchase price of the merchandise. In such a case, where possible, the benefit may be rescinded in whole or in  
5 part (e.g., where the benefit includes frequent flier miles, by cancelling some of the frequent flier miles).

The commercial transaction may also include activity that occurs in advance of payment, such as ordering activity. For example, the formulas and rules  
10 may be arranged so that the third party receives a benefit if the customer places an order but the commercial transaction fails for a reason not attributed to the third party or the customer (e.g., the merchant is out of stock).

15 The actions of the transaction analyzer computer also allow auditing of the results of the relationship between the merchant and the third party. The operator of the transaction analyzer computer may be independent of the merchant and the third party and may retain the  
20 information provided by each so that from time to time the retained information may be compared with information stored by the merchant and the third party. Thus, the merchant can gain confidence that the referral information is accurate and uninflated and the third  
25 party can gain confidence that the transactions resulting from the referral are being tracked accurately.

In general, all or nearly all of the merchant's transaction information may be received by the matching software or the correlation software, e.g., where such  
30 software serves as the only transaction information link or one of a small number of transaction information links for the merchant. The transaction information may include non-credit-card payment information, such as electronic cash information (e.g., supported by  
35 CyberCash). Any type of third-party credit may be



handled by the matching software or the correlation software as long as the transaction information supplies sufficient details to enable the matching software or the correlation software to perform the identity correlation or the event correlation as described above. If the matching software or the correlation software is to serve as a conduit for passing the transaction information on to the particular payment processing software associated with the third-party credit, the transaction information must also include sufficient details to enable the matching software or the correlation software to satisfy the particular payment processing software.

The membership database may be implemented in any of many different ways, including as a database that is file or memory-based, flat, indexed, fully-inverted, relational, or object-oriented, and searches of the database may be performed by a structured query. Each of the computers described above may include a high-performance personal computer or a mainframe computer, and may run an operating system such as Microsoft Windows NT or Unix.

Other embodiments are within the scope of the following claims. For example, the referral may occur by telephone, such as where the third party operates a telephone voice menu system that can patch the customer-caller through to the merchant's sales telephone line (e.g., a toll-free sales line). In such a case, the referral information recorded by the voice menu system may include an indication of the identity of the customer-caller (e.g., the customer-caller's telephone number acquired by a caller ID or ANI technique), the time that the customer-caller was patched through, and an indication of the identity of the merchant (e.g., the number of the merchant's toll-free sales line).

The matching software or the correlation software may be applied where an organization or a referral is inferred, as illustrated in the following example (Fig. 12). A customer visiting a department store views, handles, and tests a floor sample of a compact disc ("CD") player model that the customer would like to buy but that is currently out-of-stock at the store. After buying some CDs at the department store by credit card, the customer returns home and uses the same credit card to purchase the CD player model by telephone from a mail-order company that is not associated with the department store. In such a case, the correlation software may be used to infer a referral from the use of the credit card, to provide a benefit to the department store as compensation for contributing to the purchase by providing the customer with the opportunity to evaluate the floor sample. In a variation of the example, the department store engages in a direct referral, by providing the customer with the telephone number of the mail-order company (e.g., on a sign provided near the floor sample), and the potential for earning the benefit as managed by the correlation software provides the store with an incentive to make the direct referral.

The referral event may include any noteworthy event, such as a search conducted by the customer with an on-line search engine that produces results indicating the merchant (e.g., a search for hotels that produces results that include the telephone number of a hotel where the customer subsequently uses a credit card).

As shown in examples above, an on-line referral may be the subject of event correlation by the correlation software even if the user-customer logs off the Internet after the referral event and before the commercial transaction occurs.

In general, the identity correlation and the event correlation are possible in any situation in which an indication of the identity of the customer is provided and there is at least a minimum level of confidence that  
5 the commercial transaction occurred or is occurring.

The technique (i.e., at least a portion of one or more of the procedures described above) may be implemented in hardware or software, or a combination of both. In at least some cases, it is advantageous if the  
10 technique is implemented in computer programs executing on programmable computers that each include a processor, a storage medium readable by the processor (including volatile and non-volatile memory and/or storage elements), at least one input device such as a keyboard,  
15 and at least one output device. Program code is applied to data entered using the input device to perform the procedure described above and to generate output information. The output information is applied to one or more output devices.

20 In at least some cases, it is advantageous if each program is implemented in a high level procedural or object-oriented programming language such as Microsoft C, C++, Java, Cobol, or VB (visual basic) to communicate with a computer system. The programs can be implemented  
25 in assembly or machine language, if desired. In any case, the language may be a compiled or interpreted language.

In at least some cases, it is advantageous if each such computer program is stored on a storage medium or  
30 device (e.g., ROM or magnetic diskette) that is readable by a general or special purpose programmable computer for configuring and operating the computer when the storage medium or device is read by the computer to perform the procedures described in this document. The system may  
35 also be considered to be implemented as a computer-

readable storage medium, configured with a computer program, where the storage medium so configured causes a computer to operate in a specific and predefined manner.

What is claimed is:

Claims

1. A method comprising:  
acquiring affiliation information that identifies  
parties affiliated with an organization in a manner that  
5 enables the parties to be associated with commercial  
transactions occurring outside the organization; and  
substantially contemporaneously with commitment by  
a customer to a commercial transaction that produces  
transaction information for effecting payment  
10 electronically from a source other than the organization,  
determining whether the commercial transaction is on  
behalf of a party affiliated with the organization based  
on the affiliation information and the transaction  
information.
- 15 2. The method of claim 1, further comprising  
determining whether a benefit is due to the  
affiliated party in connection with the commercial  
transaction.
- 20 3. The method of claim 1, further comprising  
determining the extent of a benefit due the  
affiliated party based on the affiliation information and  
the transaction information.
- 25 4. The method of claim 2, wherein the benefit  
includes an instantaneous or deferred price discount.
5. The method of claim 1, wherein the  
organization includes a diners' organization.
6. The method of claim 1, further comprising  
by a credit card machine, producing at least a  
portion of the transaction information.
- 30 7. The method of claim 1, further comprising  
based on the transaction information, effecting  
payment electronically.
8. The method of claim 7, in which the payment is  
effected via the Internet.

9. The method of claim 1, further comprising storing the affiliation information in a membership database.

10. The method of claim 1, wherein the commercial  
5 transaction includes an on-line transaction.

11. The method of claim 9, in which the on-line transaction is effected through the Internet.

12. The method of claim 1, wherein the transaction information indicates a credit card number.

10 13. The method of claim 1, wherein the transaction information indicates one or more of the identity of the transacting party an address, postal address, e-mail address, account number, customer identification or member identification.

15 14. The method of claim 1, wherein the transaction information indicates an attribute of the purchased item or service including one or more of a product code, product type model number, part number, SKU, product identification, manufacturer identification,  
20 or product number.

15. The method of claim 1, wherein the transaction information includes information allowing identification of a party to the commercial transaction.

25 16. The method of claim 1, wherein the transaction information indicates at least a portion of the value of the commercial transaction.

17. The method of claim 1, wherein the transaction information indicates a surrogate credit card number, account number, account identification, or  
30 encrypted account identification.

18. The method of claim 20, wherein adjusting the transaction information comprises adjusting payment information.

19. The method of claim 18, in which adjusting the payment information includes changing the dollar amount or the issuance of a refund.

20. The method of claim 1, further comprising  
5 adjusting the transaction information.

21. The method of claim 1, further comprising adjusting the transaction information to allow a benefit to be provided to the party affiliated with the organization.

10 22. The method of claim 1, further comprising causing a discounted price to be presented to a customer.

23. The method of claim 1, further comprising determining whether a spending goal has been  
15 reached.

24. The method of claim 1, further comprising determining whether an activity goal has been reached.

25. The method of claim 1, further comprising  
20 acquiring at least a portion of the affiliation information by a formal registration process.

26. The method of claim 1, further comprising acquiring at least a portion of the affiliation information from information acquired as a result of a  
25 previous transaction.

27. The method of claim 1, further comprising by a Web site, producing the transaction information.

28. The method of claim 1, further comprising  
30 acquiring an electronic mail message or data from an electronic draft capture device that includes at least a portion of the transaction information.

29. The method of claim 1, further comprising receiving at least a portion of the transaction  
35 information from a payment processor.

30. The method of claim 1, further comprising acquiring at least a portion of the transaction information via an application program interface.

31. The method of claim 1, wherein the  
5 determining step comprises  
applying a hashing method to at least a portion of the affiliation information and at least a portion of the transaction information.

32. The method of claim 1, wherein the commercial  
10 transaction includes a purchase.

33. The method of claim 1, wherein the commercial transaction includes a lease.

34. The method of claim 1, wherein the commercial transaction includes a merchandise return.

15 35. The method of claim 1, wherein the commercial transaction includes a customer order.

36. The method of claim 1, wherein the commercial transaction includes a license for digital information and/or any digital medium.

20 37. The method of claim 1, wherein the commercial transaction includes a request for information.

38. The method of claim 1, wherein the commercial transaction includes a site visit.

25 39. The method of claim 1, wherein the commercial transaction includes a viewing or activation of on-line content.

40. The method of claim 1, wherein the commercial transaction includes a value interaction.

30 41. The method of claim 1, further comprising  
based on at least a portion of the information that is the subject of the determination, executing an audit.



42. The method of claim 1, wherein the transaction information includes virtual currency, electronic cash information, or fungible entity including one or more of points, certificates, coupons or credits.

5 43. A method comprising:

acquiring affiliation information that identifies parties affiliated with an organization in a manner that enables the parties to be associated with credit card transactions occurring outside the organization; and

10 substantially contemporaneously with acquiring an authorization code during execution of a credit card transaction that produces credit card information for effecting payment, determining whether the credit card transaction is on behalf of a party affiliated with the  
15 organization based on the affiliation information and the credit card information.

44. The method of claim 43, comprising:

appending membership information such as membership status, membership history, or account  
20 information.

45. The method of claim 46, comprising:

appending membership information such as membership status, membership history or account information.

46. A method comprising:

acquiring affiliation information that identifies parties affiliated with an organization in a manner that enables the parties to be associated with credit card transactions occurring outside the organization; and within a specified amount of time of acquiring an authorization code during execution of a credit card transaction that produces credit card information for effecting payment, determining whether the credit card transaction is on behalf of a party affiliated with the organization based on the affiliation information and the credit card information.

47. A method comprising:

acquiring referral information that indicates a referral event and a destination associated with the referral event; and substantially contemporaneously with commitment by a customer to a commercial transaction that produces transaction information for effecting payment electronically, determining an extent to which the commercial transaction is a result of the referral event based on the referral information and the transaction information.

48. The method of claim 47, further comprising determining whether a benefit is due a party responsible for the referral event.

49. The method of claim 47, further comprising determining the extent of a benefit due a party responsible for the referral event.

50. The method of claim 47, further comprising  
by one or more of a credit card machine or an  
electronic draft capture device, point-of-sale terminal,  
web site, commence server, vending device, kiosk,  
5 television set top box, or network connection device,  
producing at least a portion of the transaction  
information.

51. The method of claim 47, further comprising  
based on the transaction information, effecting  
10 payment electronically.

52. The method of claim 47, wherein the  
commercial transaction includes an on-line transaction.

53. The method of claim 47, wherein the  
transaction information indicates a credit card number.

15 54. The method of claim 47, wherein the  
transaction information indicates one or more of an  
address a postal address, an e-mail address, an account  
number, a customer identification, or a member  
identification.

20 55. The method of claim 47, wherein the  
transaction information indicates attributes of the  
purchased item or service including one or more of a  
product code product type, model number, part number,  
SKU, product identification, manufacturer, identification  
25 or product number.

56. The method of claim 47, wherein the  
transaction information includes information allowing  
identification of a party to the commercial transaction.

57. The method of claim 47, wherein the  
30 transaction information indicates at least a portion of  
the value of the commercial transaction.

58. The method of claim 47, wherein the  
transaction information indicates a surrogate credit card  
number, account number, account identification or  
35 encrypted account identification.

59. The method of claim 47, further comprising acquiring at least a portion of the referral information by a formal registration process.

5 60. The method of claim 47, further comprising acquiring at least a portion of the referral information from information acquired as a result of a previous transaction ("accumulation").

61. The method of claim 47, further comprising by a Web site, producing the transaction  
10 information.

62. The method of claim 47, further comprising acquiring an electronic mail message that includes at least a portion of the transaction information.

63. The method of claim 47, further comprising  
15 receiving at least a portion of the transaction information from a payment processor.

64. The method of claim 47, further comprising acquiring at least a portion of the transaction information via an application programmatic interface.

20 65. The method of claim 47, wherein the determination step comprises

applying a hashing method to at least a portion of the referral information and at least a portion of the transaction information.

25 66. The method of claim 47, wherein the hashing method comprises a "Bloom-filter".

67. The method of claim 47, wherein the commercial transaction includes a purchase.

68. The method of claim 47, wherein the  
30 commercial transaction includes a lease.

69. The method of claim 47, wherein the commercial transaction includes a license for digital information or any digital medium.

70. The method of claim 47, wherein the commercial transaction includes a request for information.

71. The method of claim 47, wherein the  
5 commercial transaction includes a site visit.

72. The method of claim 47, wherein the commercial transaction includes a viewing or activation of on-line content.

73. The method of claim 47, wherein the  
10 commercial transaction includes a valved interaction.

74. The method of claim 47, wherein the commercial transaction includes a merchandise return.

75. The method of claim 47, wherein the commercial transaction includes a customer order.

15 76. The method of claim 47, further comprising based on at least a portion of the information that is the subject of the determination, executing an audit.

77. The method of claim 47, wherein the  
20 transaction information includes virtual currency electronic cash information or any fungible entity including one or more of points, credits, certificates or coupons.

78. The method of claim 47, wherein at least a  
25 portion of the referral information is a result of the entry or selection of a hyperlink.

79. The method of claim 47, wherein the referral information indicates a referral source.

80. The method of claim 47, wherein the referral  
30 information indicates a referral destination.

81. The method of claim 47, wherein the referral information indicates a customer referred.

82. The method of claim 47, wherein the referral information indicates a time.

83. The method of claim 47, wherein the referral information is a result of a Web index.

84. The method of claim 47, wherein the referral information is a result of a search engine.

5       85. The method of claim 47, further comprising determining the magnitude of a time interval between the referral event and the execution of the commercial transaction; and

10       based on the magnitude of the time interval, determining the extent of a benefit due a party responsible for the referral event.

86. The method of claim 47, further comprising acquiring multiple sets of transaction information corresponding to multiple commercial transactions.

15       87. The method of claim 47, wherein a party responsible for the referral event includes an Internet service provider.

88. The method of claim 47, wherein the referral information indicates an e-mail address.

20       89. The method of claim 47, wherein the referral information indicates a user name member identification, account name, account identification, or screen name.

90. The method of claim 47, wherein the referral event is a result of advertising.

25       91. The method of claim 90, wherein the advertising is based on a usage fee.

92. The method of claim 90, wherein the advertising is based on a finders' fee.

30       93. The method of claim 47, further comprising based on the determination, determining a benefit equal to a fraction of the value of the commercial transaction.

94. The method of claim 47, wherein the referral event includes a referral by telephone.

95. The method of claim 47, wherein the referral event includes an inferred referral.

96. The method of claim 47, further comprising based on a comparison of the referral information  
5 to the transaction information, inferring a referral.

97. The method of claim 47, wherein the referral event includes a referral by a notification provided by a first source for a product or service that the product or service is available from a second source.

10 98. A method comprising:

acquiring referral information that indicates a referral event and a destination associated with the referral event; and

substantially contemporaneously with acquiring an  
15 authorization code during execution of a credit card transaction that produces credit card information for effecting payment, determining an extent to which the credit card or commercial transaction is a result of the referral event based on the referral information and the  
20 payment information.

99. A method comprising:

acquiring referral information that indicates a referral event and a destination associated with the referral event; and

25 within a specified amount of time of acquiring an authorization code produced during execution of a credit card transaction that produces credit card information for effecting payment, determining an extent to which the credit card transaction is a result of the referral event  
30 based on the referral information and the credit card information.

100. A method comprising:

acquiring referral information that indicates an  
on-line referral event;

acquiring transaction information that indicates a  
5 commitment by a customer to a commercial transaction for  
which payment is specified to be effected electronically;  
and

determining an extent to which the commercial  
transaction is a result of the on-line referral event  
10 based on the referral information and the transaction  
information.

101. A method comprising:

acquiring affiliation information that identifies  
parties affiliated with an organization in a manner that  
15 enables the parties to be associated with commercial  
transactions occurring outside the organization;

acquiring transaction information for effecting  
payment electronically from a source other than the  
organization in connection with a commercial transaction;

20 based on the affiliation information and the  
transaction information, determining whether the  
commercial transaction is on behalf of a party affiliated  
with the organization; and

passing at least a portion of the transaction  
25 information to payment processing software.



102. A method comprising:

acquiring referral information that indicates a referral event and a destination associated with the referral event;

5 acquiring transaction information for effecting payment electronically in a commercial transaction; based on the referral information and the transaction information, determining an extent to which the commercial transaction is a result of the referral  
10 event; and

passing at least a portion of the transaction information to payment processing software.

103. A method comprising:

maintaining a database of party affiliation  
15 information that identifies parties affiliated with organizations in a manner that enables the parties to be associated with commercial transactions occurring outside the organizations;

maintaining a database of merchant affiliation  
20 information that identifies merchants affiliated with organizations;

acquiring transaction information for effecting payment in connection with a commercial transaction; and based on the party affiliation information, the  
25 merchant affiliation information, and the transaction information, determining whether the commercial transaction is on behalf of a party affiliated with an organization.

104. The method of claim 103, further comprising  
30 maintaining a database of rules that affect the determination about whether the commercial transaction is on behalf of a party affiliated with an organization; and basing the determination on rules in the database of rules.

105. A method comprising:
- maintaining a database of referral information that indicates referral events and destinations associated with the referral events;
  - 5        acquiring transaction information for effecting payment in connection with a commercial transaction;
  - maintaining a database of rules that affect the extent to which the commercial transaction is considered a result of a referral event; and
  - 10        based on the referral information, the transaction information, and the database of rules, determining an extent to which the commercial transaction is a result of a referral event.



INVESTOR IN PEOPLE

Application No: GB 9924630.8  
Claims searched: 1-105

38 Examiner: Mike Davis  
Date of search: 11 May 2000

## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.R): G4A (AUXF)

Int Cl (Ed.7): G06F

Other:

### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2308474 A (WENDKOS) whole document	1-105
X	EP 0308224 A2 (MERIDIAN ENTERPRISES) whole document	1-105
X	WO 95/12175 A1 (RADISSON...) whole document	1-105

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.